



# Northeast Coastal and Barrier Network

## Natural Resource Inventory and Monitoring in National Parks on the Atlantic Coast

The Inventory and Monitoring Program (I&M) is a national program that provides critical information to parks and the public about the health of park landscapes, ecosystems, and species. Information is needed that can provide early warning to park natural

**“to conserve the scenery and the natural and historic objects and the wild life therein...for the enjoyment of future generations”**

**-Organic Act 1916**

resource managers of potential ecological problems occurring in the park. The program was established to ensure that park managers have high quality, scientifically-based information to protect and manage parks. This will enable managers to take management action before serious ecosystem damage occurs.

This long term program has two components: The gathering of baseline information about park natural resources through 12 “core inventories” and the development and implementation of “Vital Signs” monitoring.

The Northeast Coastal and Barrier Network (NCBN), one of 32 Inventory and Monitoring networks throughout the National Park System, includes eight parks located along the Atlantic seaboard. These parks are similar in their extensive coastal interface with uplands grading into coastal rivers, estuaries, and open ocean, and by shifting sand ecosystems that comprise beaches, dunes, barrier islands, and coastal marshes.



Cape Cod National Seashore



Colonial National Historical Park

## Taking Inventory

The National Parks Omnibus Management Act of 1998 is the precursor to the Natural Resource Challenge, the prime directive guiding the NPS Inventory and Monitoring Program. This act states that "the Secretary shall undertake a program of inventory and monitoring of National Park System resources to establish baseline information and to provide information on the long-term trends in the condition of the National Park System."

The mission of the National Park Service is to protect the resources found in parks for the enjoyment of future generations. Protecting these resources requires the identification of living things, natural processes, and landscape features. Natural resource inventories will provide park managers with information detailing park resources, such as water, landforms, climate, and distribution of plants and animals. The inventories provide baseline information for park managers to effectively manage and protect resources. The NPS has established twelve "core" inventories:

- Automated Bibliographies
- Species Occurrence (vertebrates & vascular plants)
- Species Distribution (species of concern)
- Base Cartography Data (mapping)
- Vegetation Maps
- Soils Maps
- Geologic Maps
- Water Resource Inventory
- Water Chemistry Inventory
- Air Quality Inventory
- Air Quality-Related Values Assessment (e.g. ozone damage to plants)
- Meteorological Data Inventory



Cape Cod

# Shifting Sands, Thriving Marshes, A Network of Sanctuaries



Assateague National Seashore

## Assateague Island NS

Assateague Island National Seashore encompasses more than 19,000 hectares, greater than half of which consists of oceanic and estuarine waters surrounding the Island. Located near the Washington/Baltimore/Philadelphia metropolitan area, Assateague hosts more than 1.8 million visitors every year. Natural resources include coastal geological features and beach, dune, and marsh communities supporting aquatic and terrestrial plants and wildlife, including Assateague's renowned free-roaming feral horses. The physical and ecological processes at Assateague reflect the complexity of the land/sea interface along the Mid-Atlantic coast, and demonstrate the adaptive extremes necessary for survival on a barrier island, where exposure to salt spray, lack of fresh water, and shifting sands create a harsh and dynamic environment.

## Cape Cod National Seashore

Cape Cod National Seashore preserves 17,442 hectares of uplands, wetlands and tidal lands located on Outer Cape Cod, Massachusetts. The park contains an exceptional array of coastal communities, including pitch pine/oak forests, heathlands (nearly the entire eastern U.S. distribution of heathlands is restricted to fragments on the Outer Cape and in coastal Maine), dunes, and coastal plain pond shores. In addition, there are many diverse aquatic and marine habitats. Cape Cod was selected as one of eleven prototype long-term ecological monitoring programs to help guide the I&M Program. The monitoring projects and protocols developed at Cape Cod have served

as models for the development of the salt marsh and coastal geomorphology projects.

## Colonial National Historical Park

The 3,740 hectares of Colonial National Historical Park includes Yorktown, Colonial Parkway, Jamestown Island, and Colonial Williamsburg (managed by the Association for Protection of Virginia Antiquities) are within the coastal plain of tidewater Virginia. Numerous wetlands and waterways and mixed pine and hardwood forests cover most of the park, providing habitat for a large variety of birds, fish, mammals, and aquatic and terrestrial invertebrates typical of the mid-Atlantic Coastal Plain. The Yorktown unit is characterized by sandy/gravelly shore in an urban setting. The Jamestown unit occupies all of Jamestown Island on the northeast bank of the lower James River, is low in elevation, and dominated by wetlands and tidal creeks.



Fire Island NS: Black Skimmers

## Fire Island National Seashore

Fire Island National Seashore is located on a 7,832 hectare barrier island along the southern coast of Long Island, New York. An additional parcel, the William Floyd Estate, is located across from the island on the Long Island mainland. Fire Island has the only federally designated wilderness in the National Parks of the Northeast. The park is typical of Atlantic barrier islands that grade from a primary dune along the ocean to salt marsh along the bay, and includes an extensive forested area within the more sheltered area of the dunes on the eastern side of the island. The William Floyd

# Shady Forests and Tidal Waters: along the Northeast Atlantic Coast.

Estate is a complex of forests, fields, and maintained landscapes more typical of coastal uplands in the region.



Gateway NRA: Seals at Spermacetti Cove

## Gateway National Recreation Area

Historic military fortifications and grounds interspersed with coastal upland forests and fields, freshwater ponds, marshes, bays and mudflats comprise Gateway National Recreation Area. The park is divided into three geographically separate units, Jamaica Bay/Breezy Point, Staten Island, and Sandy Hook, that constitute some of the largest and most significant natural areas remaining in the metropolitan New York City area. Jamaica Bay

Wildlife Refuge, within the Jamaica Bay Unit, is one of the most important urban wildlife refuges in the United States. The Sandy Hook Unit forms the southern boundary of the New York - New Jersey Harbor Estuary and serves as an important ecological transition zone along the Atlantic Coast.

## George Washington Birthplace NM

Located in rural tidewater Virginia, and commemorating the birthplace of President George Washington, is the George Washington Birthplace National Monument. The park consists of 220 hectares of fairly flat terrain typical of the coastal plain, along the tidal reaches of the



George Washington Birthplace NM

Potomac River. In addition to fresh and saltwater marshes and swamps, the park has mixed conifer/hardwood forests, loblolly plantations, and open fields.

## Sagamore Hill NHS

Located on the peninsula of Cove Neck, Long Island, New York, Sagamore Hill National Historic Site was the home of President Theodore Roosevelt. The park consists of 35 hectares that remain from a larger purchase of farmlands in 1883 by Roosevelt. Parklands include a small salt marsh, a freshwater pond, an oak-tulip tree forest and lawn and field areas near the historic Roosevelt residence.

## Thomas Stone NHS

Thomas Stone National Historic Site, located about 32 km south of Washington D.C, commemorates the home and life of Thomas Stone, one of the signers of the Declaration of Independence. The park contains hilly lands that drain into the Hoghole Run, which flows into Port Tobacco Creek south of the park boundary. Natural resources in the park include wetlands, mixed forests and fields.



The Inventory and Monitoring Program provides high quality information that park managers can use to assess or change current resource management practices, and also identifies critical research priorities.

## Vital Signs Monitoring

Park Vital Signs are key physical, chemical, and biological elements and processes of park ecosystems. These can include the condition of water, air, geologic resources, plants and animals, as well as the ecological, biological, and physical processes at work in parks. Vital Signs monitoring will provide park managers with information on the status and trends of park Vital Signs and can serve as an early warning system anticipating harmful changes to park ecosystems.

Northeast Coastal and Barrier Network personnel are working with park staff, and regional scientists, to design, develop, and implement a Vital Signs Monitoring Program in the eight Network parks. Data collected from each monitoring project will be summarized annually and provided to park resource management staff. Multiple year data will be analyzed for trends and a status report will be provided to each park.



# NCBN Vital Signs

# To Learn More...

Protocol	Vital Sign
Estuarine Eutrophication	Estuarine Water Chemistry
	Estuarine Water Quality
	Estuarine Water Clarity
	Estuarine Sediment Chemistry
	Seagrass Distribution
	Seagrass Condition
Estuarine Nitrogen Loading	Estuarine Nitrogen Loading
Ocean Shoreline Position	Shoreline Position
Coastal Topography	Coastal Topography
	Offshore Topography
	Marine Hydrography
	Anthropogenic Modifications
Salt Marsh Vegetation	Salt Marsh Vegetation Community Structure
Salt Marsh Nekton	Salt Marsh Nekton Community Structure
Salt Marsh Elevation	Salt Marsh Sediment Elevation
Visitor Impacts	Visitor Impacts
Visitor Use	Visitor Use
Landscape Change	Landscape Change

There is more information about the National Inventory and Monitoring Program, the Northeast Coastal and Barrier Network, and the National Park sites in the network at the following websites:

National Inventory and Monitoring Program:  
<http://science.nature.nps.gov/im/index.htm>

Northeast Coastal and Barrier Network:  
<http://www1.nature.nps.gov/im/units/ncbn/index.htm>

National Park Sites:  
<http://www.nps.gov/parks.html>



Gateway NRA Fort Wadsworth



Fire Island NS  
Lighthouse

**National Park Service**  
U.S. Department of the Interior



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Northeast Coastal and Barrier Network  
The University of Rhode Island  
105 Coastal Institute in Kingston  
Kingston, Rhode Island 02881

Bryan Milstead, Coordinator  
bryan\_milstead@nps.gov  
401-874-4603

Sara Stevens, Science Information Coordinator  
sara\_stevens@nps.gov  
401-874-4548

Mark Duffy, GIS  
mark\_duffy@nps.gov  
410-641-1443 ext 219

Marc Albert, Natural Resource Specialist  
marc\_albert@nps.gov  
617-223-5170

Theresa T. Moore, Science Communications  
theresa\_moore@nps.gov  
802-457-3368 ext. 23

Editors:  
Theresa T. Moore and M. Albert

## The Northeast Coastal and Barrier Network

